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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/765,540 | 01/19/2001 | Robert Austin Owens | 2001US301 | 1414 |

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| EXAMINER | |
|---|---|
| COLE, MONIQUE T | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1743 | |

DATE MAILED: 11/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/765,540 | OWENS ET AL. | |
| | Examiner | Art Unit | |
| | Monique T. Cole | 1743 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *24 August 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 15, 16, 17 & 18 rejected under 35 U.S.C. 103(a) as being unpatentable over USP 5,389,546 to Becket (herein referred to as "Becket") in view of Skoog et al. "Fundamentals of Analytical Chemistry" (herein referred to as "Skoog") & "Potentiometric pH-stat titration: Importance of an inert atmosphere in reaction vessels when using alkali titrant." by Ballantyne (herein referred to as "Ballantyne").

Becket discloses a method for determining alkalinity comprising: obtaining an aqueous basic solution of unknown concentration and known volume; adding aqueous acid solution of known acid concentration from a burette to the unknown solution until a pre-determined end-

point is obtained, whereupon the addition of acid solution is terminated. The volume of acid used is read and alkalinity of the sample fluid is calculated according to a specified relationship. The aqueous acid may be HCl (col. 9, line 22). The process may be automated or manual. See also col. 3, line 61-col. 4, line 46.

Becket teaches the invention substantially as claimed, but does not teach that the components are weighed.

However, Skoog teaches that it is advantages to weigh the mass of titrant rather than the volume because the titration can be performed more easily and more rapidly than volumetric titrations. Moreover, gravimetric titration has the additional advantages of: eliminating calibration of glassware and tedious cleaning & improving the precision and accuracy of the process. Thus, given the clear advantages of gravimetric titration, it would have been obvious to one having ordinary skill in the art to modify the Becket reference by weighing the titration components. While neither Becket nor Skoog specifically teach calculating the concentration in terms of normality, this is a known unit of measurement often used in analytical chemistry for titration purposes.

The combination of Becket and Skoog does not disclose that about 1-10% of the original base is left as residual non-neutralized base. However, it is well known and appreciated in the chemical arts that titration is performed more slowly, or even stopped, as you begin to near the endpoint. This is done to prevent "over-titrating" the unknown beyond necessary and allows the acid to fully react with the base solution with the help of a stirrer. Such a step is particularly important when no stirrer is present.

The combination of Becket and Skoog neglects to teach that the titration be performed in an inert atmosphere. Howver, Ballantyne teaches that it is known to perform titration in an inert atmosphere to eliminate error due the presence of air. Ballantyne teaches nitrogen as the protective inert atmosphere. Thus, given Ballantyne's teaching of increased precision obtained from titrating under inert conditions, it would have been obvious to one having ordinary skill to modify Becket in view of Skoog to be performed in an inert atmosphere.

With regard to the instant claim's lack of refilling, it would have been obvious to eliminate this step as a means to make the titration process more efficient.

With regard to the instant claim's reference to the density of the developer solution, the weight and the volume are known, and thus one of ordinary skill in the art would know how to perform a simple mathematical operation to derive density.

Regarding the storage temperature of the acid titrant, while Becket does not specify the temperature at which the reactants are kept, it would have been obvious to one having skill in the art to keep the acid titrant at room temperature as this would be the easiest temperature at which to maintain the reactant.

With regard to claims 2 & 3, it would have been obvious to weigh the reactants in any order, as it has been held that selection of any order to performing process steps is prima facie obvious in the absence of new or unexpected results. See MPEP 2144.04(IV)(C ).

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Becket in view of Skoog & Ballantyne as applied to claims 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 15, 16, 17 & 18 above, and further in view of USP 5,340,541 to Jackson et al. (herein referred to as "Jackson").

Becket in view of Skoog & Ballantyne fails to teach that the reactants are weighed in closed containers.

However, Jackson teaches a titration method that recognizes the clear advantage of utilizing closed containers within titrations. Namely, the use of closed containers eliminates erroneous results due to environmental moisture contamination or loss of material during the sample transfer process. Thus, given that it is well appreciated in the art that closed containers facilitate more accurate measurements as taught by Jackson, it would have been obvious to one having ordinary skill to modify the titration method as taught by the combination of Becket, Skoog & Ballantyne to further include weighing the reactants in closed containers in order to obtain more results.

5. Claims 13 & 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Becket in view of Skoog & Ballantyne as applied to claims 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 15, 16, 17 & 18 above, and further in view of Re. 28970 to Shapiro (herein referred to as "Shapio").

Becket in view of Skoog & Ballantyne fails to teach that the burette has a plunger.

However, Shapiro teaches the use of a burette containing a plunger for the purpose of greater repetitive accuracy when dispensing liquids. The plunger-burette has the further advantages of providing increased safety, wide versatility, cleaning ease and being bubble-free. The plunger extends for about 75% of the burette length. See Figure 1. Thus, given the many noted advantages of the Shapiro plunger burette, it would have been obvious to one having ordinary skill in the art to modify the titration combination of Becket, Skoog & Ballantyne to

further include a plunger burette for the purpose of improving the dispensing accuracy, such as taught by Shapiro.

*Response to Arguments*

6. Applicant's arguments with respect to weighing the titration components have been considered but are moot in view of the new ground(s) of rejection.

7. In response to applicant's argument that the examiner has combined an excessive number of references, reliance on a large number of references in a rejection does not, without more, weigh against the obviousness of the claimed invention. See *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991).

8. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

9. With respect to Applicant's request that documention be provided for the Examiner's assertion that it is well known in the art that titrations are performed slowly, or even stopped as you near the endpoint, the Examiner again points out that such practice is common in the field of analytical chemistry. Such practice can reasonably be assessed as being unquestionably demonstrable in any chemical laboratory.

10. Applicant further questions the Examiner's assertion that the plunger in Shapiro is 75% of the buret length. The Examiner has relied on the figure to extrapolate this percentage. However, to the extent that this is not correct, it is the Examiner's position that such a plunger length would be obvious to one having ordinary skill in the art in order to optimize the performance of the buret, absent any evidence to the contrary.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monique T. Cole whose telephone number is 571-272-1255. The examiner can normally be reached on Monday-Thursday from 6:30 A.M. to 4:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M. T. Cole

Monique T. Cole
Examiner
Art Unit 1743

MC